

Serial No. 10/681,519

Attorney Docket No. 2001P23807US

Amendments To The Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-11 (Canceled).

12. (currently amended) A turbine shaft in a turbine engine, comprising:
a first cooling circuit characterized by a first region separated flow wise from a third region by a second region, said first cooling circuit being further characterized by a fourth region, a fifth region and a sixth region connected flow wise to one another to pass fresh air but separated flow wise from the first, second, and third regions;

wherein the first region contains live steam during operation,

wherein the third region contains used steam during operation, and

wherein the second region is located within a first blade,

wherein the fourth region is located within a first guide vane to pass fresh air therethrough to the fifth region,

wherein the fifth region passes fresh air received from the fourth region to the sixth region, and

wherein the sixth region is located within the first blade and passes therethrough fresh air received from the fifth region; and

a second cooling circuit characterized by a first region separated flow wise from a third region by a second region, said second cooling circuit being further characterized by a fourth region, a fifth region and a sixth region connected flow wise to one another to pass fresh air but separated flow wise from the first, second, and third regions;

wherein the first region contains live steam during operation,

wherein the third region contains used steam during operation, and

wherein the second region is located within a second blade,

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wherein the fourth region is located within a second guide vane to pass fresh air therethrough to the fifth region.

wherein the fifth region passes fresh air received from the fourth region to the sixth region, and

wherein the sixth region is located within the second blade and passes therethrough fresh air received from the fifth region;

wherein each first region is in communication flow wise with a source of live steam during operation, and

whereby each of the cooling circuits is effective to maximize cooling efficiency by delivering live steam to each of the cooling circuit first regions and by delivering fresh air through the fourth, fifth and sixth regions.

13. (previously presented) The turbine shaft according to claim 12, wherein the third region of the first circuit communicates flow wise with the third region of the second circuit.

14. (previously presented) The turbine shaft according to claim 13, further comprising a coolant exit in communication flow with at least one of the third regions.

15. (previously presented) The turbine shaft according to claim 13, wherein the third region of the first circuit is sealed from the first region of the second circuit during operation.

16. (currently amended) The turbine shaft according to claim 15, wherein the third region of the first circuit is located radially ~~inward~~ outward from the first region of the second circuit.

17. (previously presented) The turbine shaft according to claim 15, wherein a pressure of the live steam is greater than a pressure of the used steam.

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18. (currently amended) A turbine shaft in a turbine engine, comprising:
a first cooling circuit characterized by a first region separated flow wise from a third region by a second region, said first cooling circuit is further characterized by a fourth region, a fifth region and a sixth region connected flow wise to one another to pass fresh air but separated flow wise from the first, second, and third regions;

wherein the first region contains live steam during operation,

wherein the third region contains used steam during operation, and

wherein the second region is located within a first blade,

wherein the fourth region is located within a first guide vane to pass fresh air therethrough to the fifth region,

wherein the fifth region passes fresh air received from the fourth region to the sixth region, and

wherein the sixth region is located within the first blade and passes therethrough fresh air received from the fifth region;

a second cooling circuit characterized by a first region separated flow wise from a third region by a second region, said first cooling circuit being further characterized by a fourth region, a fifth region and a sixth region connected flow wise to one another to pass fresh air but separated flow wise from the first, second, and third regions;

wherein the first region contains live steam during operation,

wherein the third region contains used steam during operation, and

wherein the second region is located within a second blade,

wherein the fourth region is located within a second guide vane to pass fresh air therethrough to the fifth region,

wherein the fifth region passes fresh air from the fourth region to the sixth region,
and

wherein the sixth region is located within the second blade and passes therethrough fresh air received from the fifth region; and

a coolant exit in communications flow with at least one of the third regions,
wherein the third region of the first circuit communicates flow wise with the third region of the second circuit,

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whereby the first and second blades are cooled by the live steam and the fresh air during operation.

19. (previously presented) The turbine shaft according to claim 18, wherein the third region of the first circuit is sealed from the first region of the second circuit during operation.

20. (currently amended) The turbine shaft according to claim 18, wherein the third region of the first circuit is located radially ~~inward~~ outward from the first region of the second circuit.

21-24. (cancelled)